

## CLAIMS

1. A spring manufactured by processing an elastic material, at least a part of the surface of the material formed with a film having composition and mechanical characteristics different from the material.
- 5 2. The spring according to claim 1, wherein the film is harder than the material.
3. The spring according to claim 1 or 2, wherein a plurality of layers of the film are provided.
4. The spring according to any one of claims 1 to 3, wherein the material is processed in a band-shape and wound in helical shape so that the spring becomes a mainspring.
- 10 5. The spring according to any one of claims 1 to 4, wherein the film is formed on a surface to which a compressive force is applied when the material is elastically deformed.
6. The spring according to any one of claims 1 to 5, wherein the film is a thin film 15 of a substance harder than the material coated on the surface of the material.
7. The spring according to claim 6, wherein the material is formed of a non-metal.
8. The spring according to claim 6 or 7, wherein the thin film is formed on the material by a physical vapor evaporation of which film-forming temperature is around a room temperature.
- 20 9. The spring according to any one of claims 1 to 5, wherein the film is a diffusion layer formed harder than the material by diffusing a diffusion substance strongly bonded with a composition constituting the material from the surface of the material to the inside.

10. The spring according to claim 9, wherein the material is formed of a metal capable of thermomigration treatment.
11. The spring according to claim 9 or 10, wherein the diffusion layer is formed on the material by a diffusion treatment which supplies a gas including a molecule containing element of the diffusion substance into a high-vacuum furnace and the diffusion substance is diffused from the surface of the material to the inside.  
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12. A driving mechanism using a spring according to any one of claims 1 to 11 as a power source.
13. A device using a spring according to any one of claims 1 to 11.
- 10 14. An electronic control timepiece, comprising:
  - a mechanical energy accumulator for accumulating a mechanical energy;
  - a power generator driven by the mechanical energy accumulator;
  - a gear train for mutually connecting the mechanical energy accumulator and the power generator;
  - 15 an indicator connected to the gear train; and
  - a rotation controller for controlling rotary speed of the power generator,

wherein the spring according to any one of claims 1 to 11 is used as the mechanical energy accumulator.
15. A timepiece comprising a mechanical energy accumulator and being driven by the mechanical energy accumulator, wherein the spring according to any one of claims 1 to 11 is used as the mechanical energy accumulator.  
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